

- The equivalent weight of $MnSO_4$ is half of its molecular weight when it is converted to
 (a) Mn_2O_3 (b) MnO_2
 (c) MnO_4^- (d) MnO_4^{2-}
- In which compound chromium has +6 oxidation state
 [CPMT 2003]
 (a) $K_2Cr_2O_7$ (b) $CrCl_3$
 (c) $Cr(SO_4)_3$ (d) None of these
- Which of the following metal does not show variable valency
 [RPET 2000]
 (a) Fe (b) Hg
 (c) Zn (d) Cu
- Which of the following metals will not react with solution of $CuSO_4$ [CPMT 1974, 80; MH CET 2004]
 (a) Fe (b) Zn
 (c) Mg (d) Ag
- Which metal among following has strongest tendency to undergo oxidation [CPMT 1989]
 (a) Zn (b) Cu
 (c) Mg (d) Al
- Which of the following has highest paramagnetic character
 (a) Mn (II) (b) Fe (II)
 (c) Co (II) (d) Ni (II)
- Ammonia is a Lewis base. It forms complexes with cations. Which one of the following cations does not form complex with ammonia
 (a) Ag^+ (b) Cu^{++}
 (c) Cd^{++} (d) Pb^{++}
- Which of the following is expected to form colourless complex [AMU 2000]
 (a) Ni^{2+} (b) Cu^+
 (c) Ti^{3+} (d) Fe^{3+}
- Which of the following is ferromagnetic
 (a) Cr (b) Mn
 (c) W (d) Co
- The most stable oxidation state of Mn is
 (a) +2 (b) +4
 (c) +5 (d) +7
- The number of unpaired electrons in Mn^{+3} is
 (a) 4 (b) 3
 (c) 2 (d) Zero
- The correct order of ionic radii of Y^{3-} , La^{3+} , Eu^{3+} and Lu^{3+} is [CBSE PMT 2003]
 (a) $La^{3+} < Eu^{3+} < Lu^{3+} < Y^{3+}$
 (b) $Y^{3-} < La^{3+} < Eu^{3+} < Lu^{3+}$
 (c) $Lu^{3+} < Y^{3+} < Eu^{3+} < La^{3+}$
 (d) $Lu^{3+} < Eu^{3+} < La^{3+} < Y^{3+}$
 (Atomic No. $Y = 39$, $La = 57$, $Eu = 63$, $Lu = 71$)
- One mole of potassium dichromate completely oxidises the following number of moles of ferrous sulphate in acidic medium [MP PET 1997]
 (a) 1 (b) 3
 (c) 5 (d) 6
- The atomic radii from Cr to Cu is almost identical because of
 (a) Increasing nuclear charge from Cr to Cu
 (b) Repulsion among increased electrons
 (c) Increased screening effect to nullify increased nuclear charge
 (d) All the above
- Oxidation number of Mn in K_2MnO_4 and in $KMnO_4$ are respectively [MP PET 1991, 2001]
 (a) +6 and +7 (b) +6 and +6
 (c) +7 and +7 (d) +7 and +6
- When phosphine is passed through aqueous solution of copper sulphate, the product produced is
 (a) $Cu(OH)_2$ (b) Cu_3P_2
 (c) $[Cu(PH_3)_4]^{2+}$ (d) $[Cu(PH_3)_2]^{2+}$
- Hydroxide soluble in ammonia is [NCERT 1973, 77; MNR 1984; KCET 1992]
 (a) $Al(OH)_3$ (b) $Fe(OH)_3$
 (c) $Cr(OH)_3$ (d) $Cu(OH)_2$
- Which of the following pair of transitional elements exhibit highest and lowest density
 (a) Os and Sc (b) Os and Pt
 (c) Hg and Sc (d) Os and Ir



19. When an acidified solution of ferrous ammonium sulphate is treated with potassium permanganate solution, the ion which is oxidised is [BHU 1979]
- (a) MnO_4 (b) NH_4^+
(c) Fe^{++} (d) SO_4^{2-}

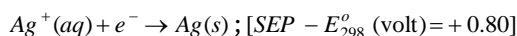
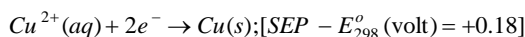
AS Answers and Solutions

(SET -19)



$$\text{Equivalent wt.} = \frac{\text{molecular wt.}}{\text{total no. of } e^- \text{ gained or lost}} = \frac{M}{2}$$

2. (a) In $K_2Cr_2O_7$, Cr has +6 oxidation state.
3. (c) Zn shows only +2 valency.
4. (d) Because Ag comes below in the electromotive series also standard electrode potential of Cu and Ag are:

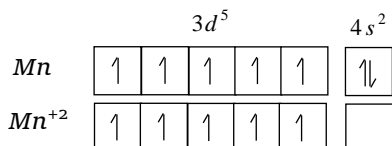


5. (c) Mg; because of its high hydration energy.
6. (a) $Mn^{+2} - 3d^5$

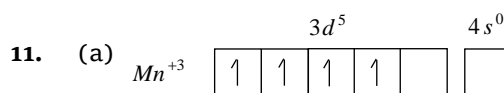
5 unpaired element in d-subshell so it has highest paramagnetic.

7. (d) Pb^{++} because it does not have vacant d-orbitals nor high nuclear charge and it does not belong to transition series.
8. (b) In Cu^{+1} (cuprous ion) d orbitals are completely filled so it will form colourless complex.
9. (d) The substances which are strongly attracted by magnetic field and show permanent magnetism even in absence of magnetic field are ferromagnetic e.g., Co, Fe, Ni

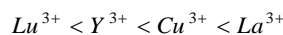
10. (a)



As half filled orbitals are more stable than partial filled ones. Therefore, +2 is most stable oxidation state.



12. (c) Lanthanide contraction results in small size of Lu^{3+} , so



13. (d) Oxidation number of chromium in potassium dichromate is +6 so it oxidise 6 moles of ferrous sulphate in acidic medium.
14. (c) Increased screening effect to nullify increased nuclear charge.

15. (a) O.N. of K_2MnO_4

$$2 + x - 8 = 0$$

$$x = 6$$

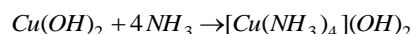
$$\text{O.N. of } KMnO_4$$

$$1 + x - 8 = 0$$

$$x = 7$$

16. (b) $3CuSO_4 + 2PH_3 \rightarrow Cu_3P_2 + 3H_2SO_4$

17. (d) Due to formation of complex



18. (a) Os and Sc

$$Os = 22.60 \text{ gm/cm}^3$$

$$Sc = 3.01 \text{ gm/cm}^3$$

19. (c) $Fe^{2+} \xrightarrow{\text{oxidises}} Fe^{3+}$
